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PATENT

emitted radiation filtered out) with the camcorder.

5 In another implementation, multiple signal collectors, such as cameras, can be used in one system to provide multiple viewpoints of the hot object. The use of multiple cameras can facilitate stereo imaging, which provides a three-dimensional image of the hot object. Also, multiple cameras can be used for multiple wavelengths, with each camera demodulating the signal carried by one wavelength.

10 In another embodiment and referring now to Figure 11, the invention can be used to protect individuals who must interact with hot objects. More specifically, in this design, two cameras 70,72 are used to capture the same field of view, with one capturing a normal image 74, which can be color or black/white, and the other capturing an image based on this invention 76 using beam splitter 77 and interference filter 79. In the normal image 74, hot object 78 is glowing. Glowing object 78 can be identified through a device, such as but not limited to, portable signal processor 82. With hot object 78 identified, the normal images of the glowing object can be replaced by room-temperature-appearance counterparts (cut out from 76 and pasted into 74). The synthesized image will be displayed to those who need to see everything in the field of view. Display 80 can be a monitor, a TV, or any other displaying device, including a displaying goggle. In order to identify the hot objects in the synthesized image, an indicator, such as, but not limited to, a red flashing boundary can be applied to the hot objects.

20 Example

An example of the present invention in one embodiment is as follows:

1. The external illumination source is a halite lamp. The halite radiation consists of three principal wavelengths, 435 nm, 550 nm, and 575 nm. The radiation at 435 nm is the most useful wavelength in this design because it is the farthest one away from the self-emitted radiation of a hot object. The hot object must be at a temperature of 1800° C or hotter for its self-emitted radiation to cover 435 nm, assuming the hot object is close to a black body.

2. The external radiation is projected onto the hot object and interacts with the surface of the hot object. The reflected radiation from the metal halite lamp (with